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ABSTRACT

A study was conducted to identify the skills and training needs of Uintah Basin (Utah) beef cattle producers. A questionnaire form was mailed to a random sample of 210 beef producers. The questionnaire consisted of a list of 106 skills to be rated by the respondents. Two basic questions were asked about each skill: (1) How important is the skill to your operation? and (2) Do you need more training in this area? The findings indicated that all of the skills in harvesting, planting, and soil preparation were rated most important. Also, more than one-half of the respondents stated that training was needed in 45 of the 106 skills listed.
 (JH)

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SURVEY OF JOB SKILLS IN THE BEEF CATTLE
INDUSTRY IN THE UINTAH BASIN

by

Kirk J. Wood

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Agricultural Education

Plan B

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U.S. DEPARTMENT OF HEALTH,
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Kirk J. Wood

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INTRODUCTION

Traditionally, research to determine job competencies has started by defining job titles and occupational clusters (Sabol, 1976; Gobbo, 1975). This method has demonstrated an overlapping of the skills required from one occupational cluster to the next (Gobbo, 1975). It was the opinion of the writer and Utah livestock experts that Utah was generally a family farm situation with a definite lack of job titles and specific assignments. The owner-operator takes care of the essential tasks to be performed with the help of family labor, hiring little or no help outside the family unit. This proved to be the case in the Uintah Basin.

As this research effort was part of an ongoing departmental study (Appendix A), there was a concern as to whether or not the length of the questionnaire would have an effect on the percent responding. Thus, it was decided to make questionnaire length versus percent response a part of this study to help validate this research in the rest of the State of Utah.

Purpose

The purpose of this study was to identify the skills needed in beef cattle production. This information is vital in keeping agricultural education up-to-date, and will aid the vocational agriculture instructors and extension agents in the State of Utah in evaluating their animal science curriculums.

Objectives

This study addressed the following objectives:

1. Identify the population of beef cattle producers.
2. Determine the job skills needed by Uintah Basin beef cattle producers.
3. Determine the educational needs of those in the business of raising beef cattle in the Uintah Basin.
4. Determine the manpower need trends of the beef cattle industry in Daggett, Duchesne, and Uintah Counties (Uintah Basin).
5. Determine the effect questionnaire length has on percent return.

Methodology

A random sample was taken from the entire population of beef producers in the Uintah Basin. The population was defined by starting with a list from the Agricultural Stabilization and Conservation Service office. This list was divided into counties, then given to the county agent, the vocational agriculture teachers, and other professional personnel in the county for refinement, completion, updating, and identification of the enterprises involved.

The survey was in the form of a mail-out questionnaire (Appendix A). The questionnaire asked two basic questions about each skill.

1. How important is the skill to your operation?
2. Do you need more training in this area?

The respondents were asked to rate each question on a Likert-type scale of 0 to 4: 0 - does not apply; 1 - not important; 2 - of some

importance; 3 - important; 4 - very important. They were also asked to circle "yes" or "no" as to whether or not they needed more training in this area. The questionnaire was accompanied by a general information sheet and a cover letter explaining the purpose of the study (Appendix A).

The list of skill areas was developed from a review of literature and private consultation with specialists in animal science at Utah State University, county agents in Utah, and ranchers in the state. The questionnaire was field-tested on a small sample of ranchers to check the clarity and completeness.

The questionnaire was mailed to a random sample of the beef producers in the Uintah Basin. A self-addressed return envelope was number coded so that the second and third follow-up mailing (Appendix A) could be sent to non-respondents.

Two questions from each of the ten major skill areas were randomly selected (Appendix C) and administered by means of a telephone interview to a random sample of the non-respondents. After consultation with Dr. Don Sisson, professor in statistical analysis at Utah State University, it was decided that a sample of 15 to 20 non-respondents should be interviewed. Of the 20 random selections, usable data were collected from 16. The remaining four either had no phone or were no longer involved in producing beef cattle.

In an attempt to see what effect, if any, questionnaire length has on the percent return, the remainder of the population of beef producers (295), received a questionnaire identical to the one sent to the random sample (210) except it contained only one of the two pages of

questions (Appendix B). The cover letter (Appendix B) explained that in order to save time, they were receiving only half of the questionnaire, and that it was essential they respond.

A computer was used in the analysis of the usable data received to find relative frequencies, means, and rankings for each of the skill areas.

REVIEW OF LITERATURE

Since the beginning of vocational educational education with the Smith-Hughes Act of 1917, the major focus of vocational agriculture has been preparing students for gainful employment. This role is clearly seen by specialists in industry (Bass, 1970). At first glance, the preparation of students for gainful employment does not seem so difficult; but when one takes a closer look at the ever-changing demands of the agricultural industry, one can start to appreciate the problems involved with vocational training in agriculture.

Before students can be trained for a particular area of work, there must be some knowledge of the skills needed for successful employment in this area. This gives rise to the question: How can one know which skills are necessary for a particular job title? Traditionally, the vocational agriculture teacher has relied on his experience, educational preparation, and agricultural background to identify the important skill areas to be taught. With an ever increasing number of agriculture teachers entering the profession with little or no practical experience in agriculture, there needs to be a means whereby this type of job skill information can be obtained (Newcomb, 1976). This need is evidenced by research that is being done in the area of agricultural competency needs and employment opportunities (Zurbrick, 1974).

Even when the agriculture teacher has had an in-depth practical experience in agriculture as a youngster, how does he keep abreast of the ever changing demands of agriculture? Cotrell et al. (1972)

suggested that occupational analysis should be periodically applied in order to keep education programs up-to-date.

Another problem is that of teacher turnover (Reese, 1976). When a new teacher comes into a geographical area, he may be unfamiliar with its agriculture. Traditionally, development of agriculture curriculum has been based on local needs (Long, 1968). However, Groves (1976) found that teachers oftentimes prepare their course offerings without the needs of the students receiving top priority. Therefore, as teacher turnover occurs, curriculum variations often take place.

In spite of this fact, vocational agriculture has a good past record. Hoyt (1965) found that differences between competencies needed and possessed by livestock producers decreased with increased years of vocational agriculture. Bennett (1965) found that of two hundred outstanding (undefined by author) farmers surveyed, fifty-three percent had been enrolled in one or more years of vocational agriculture and a high percent of farmers who had taken vocational agriculture were found in the higher corn acreages and income ranges.

If vocational agriculture instructors are to maintain their successful placement of students, their instruction must remain current with industry needs. According to Baker (1966), we will see an increase in competition for jobs. Even with the present high rate of unemployment, jobs are available for the skilled worker. If the vocational instructor can identify the skills needed by industry, then successfully teach those skills to his students, he will find a large number of his students gainfully employed. Preparing replacements for the ranchers surveyed in this study continues to be a primary responsibility for the local agricultural educators in the Uintah Basin.

FINDINGS

A random sample of 210 was taken from the population of 505 beef cattle producers in Daggett, Duchesne, and Uintah Counties.

The data in Table 1 are presented as a summary of the beef cattle producers' response to the mail-out questionnaire. One-third (70) of the 210 producers sampled responded to the questionnaire for a 33 percent return. Due to incomplete answers or lack of demographic information only 44 (21 percent) of the returns were usable. Because of the low response, the writer sampled 16 nonrespondents. A significant difference ($P < .01$) was found when analysis of variance was applied between mean scores of respondents and nonrespondents on 20 questions randomly selected.

The respondents' average weighted mean on the 20 skills was 3.06, while the nonrespondents rated the skills considerably lower with an average weighted mean of 2.55.

In testing questionnaire length versus percent return, it is interesting to note only 51 (17 percent) of the 295 producers, not in the sample, who received the split half questionnaire responded to the questionnaire. In comparison, the first mailing of the full length questionnaire had 34 (16 percent) of 210 producers return the questionnaire. This denotes only a 1 percent increase in the response rate when the shorter questionnaire was used.

Table 1. Beef cattle producers' response to questionnaire

Respondents	Number	Percent responding
Beef producers	505	
Sample	210	
Returns:		
First mailing	34	16
Second mailing	25	12
Third mailing	11	4
Total returns	70	33
Usable returns	44	21
Nonusable returns	26	12
Split half questionnaire	295	17

The total farm acreage is listed in Table 2. A breakdown of acres owned and rented as well as average acres per producer is given. It must be noted that one rancher was not included in this table. He owned 16,000 acres and rented 135,000 acres. If included, his acreage would have skewed the distribution. The reader should also be aware that 21 (49 percent) of the beef producers farm less than 300 acres.

Table 2. Total and average acres owned and rented by beef cattle respondents

	Acres	Average acres
Owned	20,803	483.79
Rented	3,728	86.70
Total	24,531	570.49

The data reported in Table 3 provide a description of cattle numbers at the present time and an average over the last 5 years. Although the number of cattle is up at the present time, it should be noted that 22 (51 percent) of 43 beef producers reduced herd numbers during the 1976-77 drought. It seems as though a few of the beef producers took advantage of low cattle prices to increase their herd size.

Dairymen who produce beef as a by-product definitely showed a lack of interest in producing meat animals when the price was down.

It must be noted that one beef producer was left off the table in an attempt to prevent the distribution and average from being skewed. He now has 1,042 head of beef cattle and a five-year average of 1,025 head.

The number of purebred breeders listed in Table 4 was identified as those having at least 25 percent of the herd purebred. There were 7 (16 percent) respondents involved in the production of purebred cattle by the 25 percent criteria. The only two breeds being raised as purebred by respondents were Hereford and Angus.

Table 3. Total and average number of beef and dairy cattle reported by respondents at the present time and a five-year average

Type	Number of head	
	Present	Last 5-year average
Beef		
Total	4,653	4,526
Average	108	105
Dairy		
Cows and heifers		
Total	239	225
Average	80	75
Market cattle (steers and bulls)		
Total	9	23
Average	3	8

Table 4. Number and percent of purebred breeders among participants

Breed	Number of breeders	Percent respondents
Hereford	3	7
Angus	4	9
Total	7	16

Data reported in Table 5 provide a description of crop averages. As the survey encompassed only those involved with beef cattle, the acreages listed in Table 5 are by no means representative of average or total acreage for the Uintah Basin. They represent crop acreages for those involved in the production of beef cattle.

Table 5. Distribution of crop and range land as quantified by acres and animal unit months of respondents

	Acres	Animal unit months
Small grains	985	
Silage	690	
Hay	3320	
Range		
Bureau of Land Management		3182
Forest		2311
Private		6475
Pasture		6180
Row crops	427	

Almost 80 percent of the beef producers still bale their hay as is indicated by the data in Table 6. However, the majority of them use some type of automatic bale wagon to haul the hay.

Table 6. Forage harvesting practices of beef producer respondents

Method	Number	Percent respondents
Baled	31	79
Stack wagon	4	10
Green chop	2	5
Dry chop	1	3
Loose	1	3

The number of employees hired, as revealed by the data in Table 7, tends to support the assumption stated in the introduction of this study. The majority of work is taken care of by family members with only 3 (7 percent) of the producers hiring full-time help at the present time. Slightly over one-third or 15 (35 percent) of the beef producers presently hire some type of part-time help.

Table 7. Number of full and part-time employees hired by respondents

Employees	2 years ago	Present	2 years future
Full time	2	3	3
Part time	16	15	17

The data reported in Table 8 reveals the number of hours respondents spent farming during the summer and winter. The number of hours

Table 8. Hours spent farming by respondents during summer and winter months

Hours	Number	Percent respondents
Summer		
0-10	1	2
11-20	1	2
21-30	10	23
31-40	6	14
41-50	3	7
51-60	7	16
61-70	8	19
over 70	7	16
Winter		
0-10	5	12
11-20	13	30
21-30	9	21
31-40	10	23
41-50	3	7
51-60	2	5
61-70	0	0
over 70	1	2

was divided into eight categories: 1 to 10 hours, 11 to 20 hours, 21 to 30 hours, 31 to 40 hours, 41 to 50 hours, 51 to 60 hours, 61 to 70 hours, and over 70 hours. Twenty-five (58 percent) of the respondents spent more than 40 hours per week farming during the summer. In contrast, only six (14 percent) spent more than 40 hours per week farming during the winter.

An examination of data in Table 9 reveals distribution of respondents by the number of years involved in farming. The number of years was divided into five categories: 1 to 10 years, 10 to 20 years, 21 to 30 years, 31 to 40 years, and over 40 years. Eighteen (42 percent) have been farming 20 years or less, while 15 (35 percent) have been farming over 30 years. Fourteen percent are at normal retirement age with 40 or more years of farming. Replacements might well come from high school or college agricultural programs.

Table 9. Distribution of respondents by number of years involved in farming

Years	Number	Percent respondents
1-10	7	16
11-20	11	26
21-30	10	23
31-40	9	21
over 40	6	14

Data reported in Table 10 reveals the percent of income from an additional occupation to farming. The percent of additional income was divided into nine categories: 0 to 10 percent, 11 to 20 percent, 21 to 30 percent, 31 to 40 percent, 41 to 50 percent, 51 to 60 percent, 61 to 70 percent, 71 to 80 percent, and over 80 percent. Nearly half of the beef producers received more than 50 percent of their total income from another job. Eleven (26 percent) had no additional income, while at the same time 11 (26 percent) of the producers relied on an additional occupation for over 80 percent of their income.

Table 10. Percentage of respondents income other than farming

Percent income	Number	Percent respondents
0-10	12	28
11-20	1	2
21-30	3	7
31-40	0	0
41-50	7	16
51-60	2	5
61-70	3	7
71-80	4	9
over 80	11	26

Data reported in Table 11 provides a description of respondents by educational level. Note that 23 (54 percent) of the beef producers

received no formal education past the high school level. On the other hand, nine (21 percent) continued on to graduate from college with 7 percent of the total respondents receiving advanced degrees.

Table 11. Participants' education level

Highest grade completed	Number	Percent respondents
8 or less	2	5
9	0	0
10	1	2
11	2	5
12	18	42
13-15	8	19
16	3	7
B.S.	6	14
M.S.	3	7
Ph.D.	0	0

Where beef producers received their preparation for farming is displayed in rank order with the most frequent response at the top and the least frequent at the bottom of Table 12. A number of the producers received training from more than one source, thus accounting for the percentages totaling more than 100. Note that only 11 (26 percent) received training for the beef cattle industry during high school. This suggests a lack of proper counseling for the students in high school.

Table 12. Respondents preparation for beef ranching

Type of preparation	Number	Percent respondents
On-the-job training	24	56
High School	11	26
College or University	9	21
Veteran's Program	3	7
Adult Education	6	14
Other	1	2

Data reported in Table 13 reveals the community resources used by the respondents. The resources are listed in rank order with the most often used appearing at the top of the list, and the least often used at the bottom. The respondents were asked to rank the resources used most often and place a 0 by the ones not used. However, the list in Table 13 is ranked strictly by frequency distribution. Those checking other as a resource listed things such as: feedstores, individual farmers, veterinarians, and banks. The majority of producers used more than one resource, therefore the percent of respondents will total more than 100. The importance of the Agricultural Stabilization and Conservation Service as a resource to farmers should be noted by agricultural educators.

Listed in Table 14 are the ten defined major skill areas in rank order as identified by the beef cattle producers in the Uintah Basin. An average weighted mean was computed for each skill area by taking the

Table 13. Frequency distribution of community resources used by beef cattle respondents

Resources	Number	Percent respondents
Agricultural Stabilization and Conservation Service	39	91
County Agent	33	77
Soil Conservation Service	29	67
Farmer's Home Administration	18	42
Production Credit Association	12	28
Vocational Agriculture Teacher	9	21
Federal Land Bank	9	21
Other	7	16

weighted mean of each skill within the defined skill area and calculating the average weighted mean for each entire skill area. A rating of important, 3.0 or higher on a 4.0 scale, was observed in 8 of 10 skill areas. Harvesting, planting and soil preparation received the highest weighted mean while maintaining equipment and vehicles, and constructing and maintaining buildings and structures both dropped below the 3.0 scale. It should be noted, however, that the two lowest ranking skill areas were both very close to the 3.0 scale, 2.98 and 2.83, respectively.

All of the skills in harvesting, planting and soil preparation were rated important by the beef cattle producers as an examination of

Table 14. The rank order of participants' computed mean of ten defined major skill areas

Skill areas	Computed mean
Harvesting, planting, and soil preparation	3.39
Marketing and shipping	3.25
Maintaining herd health	3.20
Observing legal practices and following general safety precautions	3.19
Selecting breeding and feeding stock	3.12
Handling and caring for animals	3.10
Formulating feeds and feeding	3.08
Breeding and record keeping	3.07
Maintaining equipment and vehicles	2.98
Constructing and maintaining buildings and structures	2.83
$\bar{X} = 3.12^*$	

*Average weighted mean

data in Table 15 reveals. Furthermore, more than one half of the respondents stated that they need more training in each skill listed. The overall high ratings given this skill area demonstrate the importance the beef cattle producers place on the agronomics of the livestock industry. A need for inservice training for adult and young farmers is also apparent.

Selecting a market for livestock should receive careful attention from the producer. An examination of the data in Table 16 shows

Table 15. Perceptions of livestock producers concerning the importance of skills and training needs in harvesting, planting, and soil preparation

Skills	Weighted mean	Percent need training
Figuring which fertilizer, how much, and when to apply	3.57	79
Recognizing various types of crop injury (frost drought, herbicides, insects, or disease)	3.51	65
Preparing seed bed for planting	3.48	53
Understanding proper fertilizer usage and recognizing trace element deficiencies or toxicities	3.40	84
Knowing the various methods of weed control (chemical, mechanical, and biological) .	3.37	72
Understanding the value of crop rotation . .	3.35	56
Utilizing soil test information	3.33	86
Knowing the strong and weak points of various crop varieties	3.30	65
Understanding appropriate field trial procedures for new fertilizers, soil amendments, and "soil medicines" . . .	3.21	84
$\bar{X} = 3.39^*$		

*Average weighted mean.

the importance the beef cattle producers in the Uintah Basin place on marketing and shipping. All of the skills were rated important, receiving a 3.0 or better. The majority of producers stated that they need more training in all but two of the skills listed.

Most felt confident in sorting animals according to size and weight, and determining when they are ready to market.

Table 16. Perceptions of respondents concerning the importance of skills and training needs in marketing and shipping

Skills	Weighted mean	Percent need training
Select market	3.45	67
Determine when animals are ready to market . .	3.38	44
Sort animals according to size and weight . .	3.34	37
Select appropriate marketing system (futures, contracts, ...	3.32	67
Interpret market reports	3.21	70
Analyze market cycles	3.17	63
Identify characteristics of USDA grades . . .	3.07	63
Calculate shrinkage	3.05	60
$\bar{X} = 3.25^*$		

*Average weighted mean.

The ratings for the skills in maintaining herd health are given in Table 17. Only two of the skills were rated below the important level of 3.0, calculating cost of treatment and using insecticide repellents in buildings. However, the majority of producers feel there is no additional training needed in three of the skills; using insecticide repellents in buildings, applying medication to cuts and bruises, and isolating animals.

Table 17. Perceptions of livestock producers concerning the importance of skills and training needs in maintaining herd health

Skills	Weighted mean	Percent need training
Identify symptoms of nutritional imbalance	3.47	65
Interpret labels on medications and insecticide containers	3.36	51
Identify symptoms of common cattle diseases .	3.35	70
Identify and control internal and external parasites	3.35	77
Vaccinate animals (intra-muscular, intravenous, subcutaneous)	3.29	53
Isolate animals with transmissible disease and/or injuries	3.29	35
Select appropriate method to control diseases .	3.23	60
Identify sanitation problems which may affect the herd health	3.21	60
Work with veterinarians in developing herd health program	3.12	60
Apply medication to cuts and bruises	3.12	47
Supply medication through feed and water . .	3.07	53
Calculate cost of treatments	2.98	53
Use insecticide repellants in buildings . . .	2.77	47
$\bar{X} = 3.20^*$		

*Average weighted mean.

To know and follow shipping regulations for cattle was ranked the highest in the area of observing legal practices and following

general safety precautions (Table 18). Conveniently locating fire extinguishers was the only one to receive a rating below important. Producers feel that little training is needed in this area with the majority requesting training in only two categories; following laws relating to chemical usage, and interpreting feed additive, mixing and withdrawal laws and regulations.

Table 18. Perceptions of participants concerning the importance of skills and training needs in observing legal practices and following general safety precautions

Skills	Weighted mean	Percent need training
Know and follow shipping regulations for cattle (brand inspection, health certification) .	3.38	40
Properly store and dispose of chemical and inflammable materials	3.35	33
Read and understand information on labels and signs	3.33	33
Identify and correct potential safety hazards .	3.22	40
Follow laws relating to chemical usage . . .	3.20	51
Interpret feed additive, mixing and withdrawal laws and regulations	3.20	58
Know and follow Environmental Protection Agency regulations which apply to cattle operations	3.05	47
Wear appropriate and protective work clothing (safety glasses, respirators, etc.) . .	3.00	26
Conveniently locate fire extinguishers in buildings and on equipment	2.95	33
$\bar{X} = 3.19^*$		

*Average weighted mean.

Data reported in Table 19 show the ratings beef producers gave the skills in selecting breeding and feeding stock. All skills except keeping and evaluating overall performance and health records of animals were rated important. Just about half of the respondents indicated that training was needed in all of the skills rated 3.0 or higher.

Table 19. Perceptions of livestock producers concerning the importance of skills and training needs in selecting breeding and feeding stock

Skills	Weighted mean	Percent need training
Select foundation or replacement stock . . .	3.37	49
Evaluate general conditions of animals . . .	3.30	47
Establish production goals for culling processes	3.24	44
Inspect animals for desirable traits, characteristics, and defects	3.12	47
Identify and evaluate advantages of various breeds	3.12	49
Evaluate the degree various traits and characteristics are inherited	3.07	51
Keep individual production records	3.07	51
Select breeding system to follow (cross-breeding, line-breeding, etc.)	3.07	51
Evaluate influence of consumer demand on type of animal to select	3.00	56
Keep and evaluate overall performance and health record of animals	2.83	40
$\bar{X} = 3.12^*$		

*Average weighted mean.

Castrating, dehorning, and assisting animals in delivering young were the most important skills in handling and caring for animals (Table 20). However, the beef cattle producers feel quite confident in these skills. The skills of hoof trimming, bedding animals, fitting and showing, as well as controlling waste runoff from feedlots were rated less than important. The overall training needs, as seen by the producers, in this skill area are few.

Table 20. Perceptions of livestock producers concerning the importance of skills and training needs in handling and caring for animals

Skills	Weighted mean	Percent need training
Castrate animals	3.56	21
Assist animals in delivering young	3.53	33
Dehorn animals	3.49	21
Remove manure from quarters and spread it on field	3.22	12
Isolate newly purchased animals for observation	3.10	23
Remove dead animals	3.05	7
Determine space needed for animals	3.05	23
Evaluate influence of stress on growth and condition of animals	3.05	47
Move feeder animals into proper feedlots . . .	3.03	14
Trim hoofs	2.87	28
Bed animals	2.87	14
Fit and show animals	2.80	30
Control waste runoff from feedlots	2.74	19
$\bar{v} = 3.10^*$		

*Average weighted mean.

SUBJECT: SUGGESTED BROCHURE FOR UADD CONFERENCE
(SAME BROCHURE TO BE USED FOR "PROGRAM")

SUGGESTED COPY/FORMAT

(Mailing Panel)

UTAH ADVOCATES FOR THE
DEVELOPMENTALLY DISABLED
455 East 400 South #202
Salt Lake City, Utah 84111

NON-PROFIT ORGANIZATION
U.S. POSTAGE PAID
Salt Lake City, Utah
Permit No. _____

An invitation to ...

Panel A

"Who speaks for me?" (illustration of child)

On Friday, November 3, 1978 at the Salt Lake Hilton, handicapped persons, their parents, professionals, and other friends will gather to explore the need for and role of advocates for the developmentally disabled and other handicapped persons.

Panel B

DR. ELIZABETH M. BOGGS (photo)

(Biographical Summary)

Panel C

Dr. Boggs will present a national and historical perspective to our quest to become better advocates for the handicapped.

Each conference participant will have the opportunity to exchange dialogue with some of Utah's most respected professional and volunteer advocates and to develop ideas for enhancing our individual advocacy efforts.

Register early for choice of workshops.

Panel D (Program Section)

UTAH ADVOCATES FOR THE DEVELOPMENTALLY DISABLED
CONFERENCE/WORKSHOPS

FRIDAY, NOVEMBER 3, 1978 - SALT LAKE HILTON

The data in Table 21 illustrate that the beef producer must be able to read labels and evaluate feedstuffs. Mathematics is also an important part of formulating feeds and feeding, and a high percentage of the producers requested more training in the skills requiring mathematical calculations.

Table 21. Perceptions of participants concerning the importance of skills and training needs in formulating feed and feeding

Skill	Weighted mean	Percent need training
Interpret feed tags and labels	3.23	35
Evaluate the influence the quality of feedstuffs has on production	3.23	58
Identify factors that influence the quality of feedstuffs (wet hay, etc.)	3.17	53
Calculate feed efficiency	3.16	60
Determine how feed palatability may be improved	3.15	56
Determine water requirements for animals	3.15	31
Evaluate how ration imbalance may affect production	3.15	60
Determine and balance rations for livestock	3.07	58
Determine appropriate form and prepare feed mixtures	3.07	51
Determine when feed additives should be withdrawn from animals (antibiotics, stilbestrol, etc.)	3.06	53
Calculate cost of rations and feed mixtures	3.05	49
Interpret feed analysis reports (to have your feed analyzed)	3.00	47
Precondition animals for feedlot or shipping	2.98	40
Substitute for various feedstuffs in rations	2.95	56
Work with veterinarian and feed salesman in formulating feed mixture and planning feeding programs	2.85	47
$\bar{X} = 3.08^*$		

*Average weighted mean.

Four of the eight skills in breeding and record keeping were rated important as shown by data in Table 22. Identifying various causes of breeding difficulty was the skill rated most important by the beef cattle producers, and the only one that requires more training for more than one-third of the respondents.

Table 22. Perceptions of livestock producers concerning the importance of skills and training needs in breeding and record keeping

Skills	Weighted mean	Percent need training
Identify various causes of breeding difficulty .	3.40	51
Determine number of bulls needed for brood herd .	3.27	16
Select a breeding method (pasture, AI, etc.) . .	3.21	30
Mark animals for identification (ear tags, numbers tattoos)	3.19	30
Register animals	2.97	19
Record day of birth	2.93	16
Record weaning weight	2.87	26
Use artificial insemination	2.75	26
	$\bar{X} = 3.05^*$	

*Average weighted mean.

An examination of the data in Table 23 shows that only four of the skills in maintaining equipment and vehicles were rated important by respondents. However, it should be noted that all but one (maintaining electric motors) received a rating of 2.9 or higher. Maintaining ignition systems is the only skill where the majority of producers requested more training.

Table 23. Perceptions of participants concerning the importance of skills and training needs in maintaining equipment and vehicles

Skills	Weighted mean	Percent need training
Maintain lubrication systems (oil, filters, grease)	3.12	2
Maintain ignition systems (plugs, wires, timing, points, etc.)	3.09	53
Service air cleaners	3.08	14
Inspect equipment for operating defects	3.00	37
Maintain fuel system (filters, carburetors, sediment bowls)	2.98	33
Install and adjust belts and chains on equipment	2.98	21
Prepare equipment for storage	2.98	35
Replace universal joints	2.93	28
Repack and replace bearings and seals	2.93	35
Maintain cooling systems (coolant, leaks, thermostats, hoses, etc.	2.93	28
Install and service battery	2.92	19
Maintain electric motors (clean and oil, install, replace belts and pulleys	2.82	33
$\bar{X} = 2.98^*$		

*Average weighted mean.

Repairing electrical wiring received the highest rating in the skill area of constructing and maintaining buildings and structures (Table 24). Furthermore, 60 percent of the respondents indicated a need for more training in electrical skills. The data indicate only three of the skills were rated important, 3.0 or higher. Laying brick and block was the lowest rated skill with a 2.4 weighted mean. However, 57 percent of the respondents stated that more training was needed in laying brick and block.

Table 24. Perception of livestock producers concerning the importance of skills and training needs in constructing and maintaining buildings and structures

Skillis	Weighted mean	Percent need training
Repair electrical wiring, switches, cords, circuit breakers, fuses and lighting fixtures	3.12	60
Repair metal structures with arc welder or oxy-acetylene equipment.	3.02	44
Construct and repair fences, gates, doors, and pens	3.00	24
Building construction (framing, siding, roofing, etc.)	2.90	51
Replace valves in water system and replace water pipe	2.90	30
Adjust, recondition, sharpen and store tools	2.84	26
Apply wood and metal preservatives	2.65	40
Mix, cast, finish, and cure concrete, build and remove forms	2.63	40
Lay brick and block	2.40	57
	$\bar{X} = 2.83^*$	

*Average weighted mean.

SUMMARY AND CONCLUSIONS

Summary

Purpose

The purpose of the study was to identify the skills and training needs of Uintah Basin beef cattle producers. This information will aid vocational agriculture teachers in the State of Utah in evaluating their animal science curriculum. In addition, vocational agriculture teachers and extension personnel will be able to see the training needs of adult and young farmers involved in beef cattle production.

Objectives

There were five major objectives of this study:

1. To identify the population of beef cattle producers in the Uintah Basin.
2. To determine the job skills needed by Uintah Basin cattle producers.
3. To determine the educational needs of those in the business of raising beef cattle in the Uintah Basin.
4. To determine the manpower need trends of the beef cattle industry in Daggett, Duchesne, and Uintah Counties (Uintah Basin).
5. To determine the effect questionnaire length has on percent return.

Findings

Seventy-seven (73 percent) of the 106 skills presented for an importance rating were rated important by 43 beef producers. Over 50 percent of those participating in the study stated a need for more training for a little less than one-half (45) of the skills. The respondents rated the skill areas of harvesting, planting, and soil preparation; marketing and shipping; and maintaining herd health; at 3.39, 3.25, and 3.20, respectively. They said that the individual skills figuring which fertilizer, how much, and when to apply; recognizing various types of crop injury; castrating animals; and assisting animals in delivering young; were of more importance than 102 other skills to which they were asked to respond. Only two of the ten major skill areas received an average weighting of less than important (3.0). These were maintaining equipment and vehicles (2.98); and constructing and maintaining buildings and structures (2.83).

The average respondent had 108 head of cattle and 570 acres. Sixteen percent of the respondents were involved in the production of purebred cattle. Seven percent of the respondents hired full-time help, with slightly over one-third hiring some type of part-time help. Twenty-five (58 percent) of the respondents spent more than 40 hours per week farming during the summer, while only 6 (14 percent) spent more than 40 hours per week farming during the winter. Eleven (26 percent) of the respondents had no additional occupation, while at the same time, 11 (26 percent) received over 80 percent of their income from a job other than farming. More than half of the producers received no formal

education past the high school level, but 9 (21 percent) continued on to graduate from college with 3 (7 percent) of the respondents receiving advanced degrees.

When the split half questionnaire was mailed out to 295 producers not sampled in the study, 51 (17 percent) returned the questionnaire. This represents a one percent increase in response rate when compared with the return on the first mailing of the complete questionnaire to the sample population (see Table 1). Reducing the questionnaire length by one-third did not affect rate of response from the 295 producers compared to the 210 in the original sample that received the complete questionnaire.

Conclusions

With more than one-half of the beef cattle producers receiving no formal training beyond high school, the vocational agriculture program becomes very important. The vocational agriculture teacher should work closely with the school counseling staff to insure that all students with a career interest in agriculture get preparation offered by the vocational agriculture program. Students in vocational agriculture planning a career in the beef cattle industry must not over-look the importance of course work in crop and soil science; in-as-much as harvesting, planting and soil preparation received the highest average weighted mean in the ten skill areas (3.39).

The importance of extension personnel, adult and young farmer programs cannot be over stressed. More than one-half of the respondents stated that training was needed in 45 of the 106 skills listed. Someone

must meet the training needs of these producers, many of which had little or no formal preparation for ranching. It is important to note that 49 percent farmed less than 300 acres and almost one-half said that they received one-half or more of their income from sources other than farming.

This writer is of the opinion that vocational agriculture curriculum as well as adult and young farmer programs should be based upon local community surveys such as this, in addition to other factors such as expert advice. The writer concluded that all skills receiving a rating of 3.0 or higher should be strongly considered for inclusion in the vocational agriculture program. Furthermore, as all of the skills were rated of some importance (2.0 or higher), they should be thoughtfully evaluated against present lesson plans and time constraints.

The weighted mean of non-respondents sampled was lower for 18 of the 20 skills randomly selected. Eleven of the skills that were rated important by respondents were rated of some importance by nonrespondents. There was a very significant difference between the mean scores of respondents and nonrespondents on 20 randomly selected questions when analysis of variance was applied. This suggests a possible difference between the group responding to the survey and the general population of beef cattle producers in the Basin. Therefore, the reader is cautioned against generalizing from the sample characteristics to the Uintah Basin, broadly. The reader should be aware that nonrespondents sampled by phone indicated slightly higher acreages (619 acres) with less cattle (70 head).

DISCUSSION

In reviewing the findings of this study, there is some concern on the part of committee members and this writer that the producers do not always realize what is most important to their operations. An example can be taken from the area of selecting breeding and feeding stock (Table 14). The livestock experts at Utah State University are convinced that keeping individual production records is one of the most important skills livestock producers can practice to improve his operation efficiency. Though this skill received a rating of importance by producers, keeping individual production records was ranked 7 of 10 skills in the area of selecting breeding and feeding stock.

A second example of where it may be necessary to educate the producer as to the importance of a certain aspect of production, can be found in the skill area, handling and caring for animals (Table 20). Controlling waste runoff from feedlots received a rating of 2.74 and may not be as important to producers in the Uintah Basin as experts believe it to be at the present time. As more strict enforcement of Environmental Protection Agency regulations comes about, the producer needs to become aware of the financial importance of this production factor.

This survey does not provide the answers to all of the problems of preparing people for employment in the beef cattle industry. However, it is by far more accurate than informal "windshield" surveys alone or having a local expert (vocational agriculture instructor) say, "This is what the students should be taught in animal science."

A combination of experience, wisdom, informal and formal surveys like the one reported here can improve the quality of pre-service and in-service education for beef cattle producers.

RECOMMENDATIONS

The writer recommends that:

1. Additional sampling should be done to obtain data that more adequately represents the population of livestock producers in the Uintah Basin.
2. Results of this study be used to validate educational programs designed for those planning a career in the beef cattle industry.
3. The training needs identified in this study be met by local vocational agriculture teachers and extension personnel.
4. The skills involving legal aspects of beef production be included in the curriculum regardless of their perceived importance by livestock producers.
5. Those attempting to duplicate this study:
 - a. Reduce the length of the general information sheet.
 - b. Use personal or telephone interview to collect data.
 - c. That the low response level experienced in this study be addressed in planning additional manpower and training needs surveys of farmers in Utah.

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